FETC SUCCESS
U.S. Department of Energy
Federal Energy Technology Center

ENVIRONMENTAL MANAGEMENT

- [ ] fossil energy
- [x] environmental
- [ ] energy efficiency
- [ ] other

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Remote Pipe Contamination Characterization

States Impacted:
Colorado, Florida, Idaho, Illinois, Michigan, New Mexico, Ohio, Oregon, South Carolina, Tennessee, Washington

Benefit Areas:
Environmental Remediation, Cost Savings, Worker Safety

Participants:
Science and Engineering Associates, Inc. (Technology Developer); Argonne National Laboratory; Idaho National Environmental and Engineering Laboratory; Inhalation Toxicology Research Institute; Florida Power; Portland Gas and Electric; Mound; Grand Junction.

FETC Contact:

Steven J. Bossart**

Office: (304) 285-4643
E-Mail:sbossa@fetc.doe.gov

MAIL ADDRESS:

* U.S. Department of Energy
P.O. Box 10940
626 Cochrans Mill Road
Pittsburgh, PA 15236-0940

**U.S. Department of Energy
P.O. Box 880
3610 Collins Ferry Road
Morgantown, WV 26507-0880

WEBSITE:
www.fetc.doe.gov

Description

A remotely operated survey system, called Pipe Explorer™, can thoroughly survey radiological contamination of pipes from the inside. Pipes are normally surveyed for radiological contamination by passing a hand-held sampling instrument over the exterior surface. To make a complete survey, personnel must gain access to the entire exterior surface of the pipes over their full length. For thousands of miles of DOE and private-industry piping that is buried underground or encased in concrete, this is extremely costly, often hazardous to personnel, and sometimes impossible.

The Pipe Explorer™ integrates gamma, beta, and alpha radiation detectors and video cameras with an inverting membrane deployment system. The inverting membrane protects sensors from direct contact with moisture and contaminants in the pipe. This system can transport detectors around pipe elbows and through constrictions that other systems cannot negotiate. Radiation detectors and video cameras have been deployed through pipes ranging from 2 to 18 inches in diameter with multiple 90-degree elbows.

Goals

The Pipe Explorer™ project is designed to reduce cost, time, effort, and worker exposure during characterization of contaminated piping.

Tangible Benefits

National: Across the nation, DOE and private industry sites contain thousands of miles of potentially contaminated piping. Because the Pipe Explorer™ travels inside the pipe, buried piping does not have to be excavated. This not only saves money, but significantly reduces worker exposure to contaminated materials. Through initial deployments alone, DOE has realized $3 million in cost savings. When fully deployed, the total cost savings are projected to be $112 million.

Regional: DOE sites and communities in Idaho, New Mexico, Ohio, South Carolina, Tennessee, and Washington will benefit significantly from this cost saving technology. In addition, local communities will benefit through the accelerated return of previously unproductive federal properties to productive use in local economies.

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